

REPORT
OF THE
INTERNATIONAL COMMISSION
PERTAINING TO THE
ST. JOHN RIVER
ON THE REFERENCE BY THE
UNITED STATES AND CANADA

IN RE :

“To investigate and report upon the conditions and uses of the St. John River and to make recommendations for the regulation of the use thereof by the citizens and subjects of the United States and Great Britain, according to the provisions of treaties between the two countries.”

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INTERNATIONAL COMMISSION---ST. JOHN RIVER.

The International Commission pertaining to the St. John river begs leave to submit to the Governments of the United States and Canada the following report:—

CONSTITUTION AND SCOPE OF COMMISSION.

This commission was appointed as the result of diplomatic communications between His Majesty's Secretary of State for Foreign Affairs and the Secretary of State of the United States of America, through the medium of the British Ambassador at Washington, relating to disputes and difficulties arising out of the interpretation of the provisions of the Treaty of Washington of 1842, commonly called the "Ashburton-Webster Treaty."

Two commissioners, namely, Hon. George A. Murchie, of Calais, Maine, and Hon. Peter Charles Keegan, of Van Buren, Maine, were appointed by the President of the United States on the twelfth day of January, A.D. 1909, and two commissioners, namely, Mr. Alexander P. Barnhill, K.C., and Mr. John Keeffe, both of St. John, N.B., were appointed by the Government of Canada on the third of December, A.D. 1908.

Hon. O. F. Fellows, of Bangor, Maine, was appointed as counsel on behalf of the United States, and Mr. H. A. McKeown, K.C., of St. John, N.B., and Mr. W. P. Jones, K.C., of Woodstock, New Brunswick, were appointed as counsel on behalf of Canada.

Mr. McKeown resigned, and Mr. A. J. Gregory, K.C., of Fredericton, N.B., was appointed in his place.

The Commission on behalf of the United States, is as follows:—

THEODORE ROOSEVELT,

President of the United States of America.

To all to whom these Presents shall come, GREETING:

Know ye, that reposing special trust and confidence in the integrity and ability of George A. Murchie and Peter C. Keegan, of Maine, I do appoint them Commissioners on the part of the United States in a Joint Commission to investigate and report upon the conditions and uses of the Saint John River, and to make recommendations for the regulation of the use thereof by the citizens and subjects of the United States and Great Britain, according to the provisions of treaties between the two countries, and do authorize and empower them to execute and fulfill the duties of this Commission, with all the powers, privileges and emoluments thereunto of right appertaining, during the pleasure of the President of the United States for the time being.

In testimony whereof, I have caused the seal of the United States to be hereunto affixed.

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Given under my hand at the city of Washington this twelfth day of January, in the year of our Lord, one thousand nine hundred and nine, and of the independence of the United States of America, the one hundred and thirty-third.

[Seal.]

THEODORE ROOSEVELT.

By the President:

ELIHU ROOT,

Secretary of State.

The Commission on behalf of the Dominion of Canada is as follows:—

EXTRACT from a report of the Committee of the Privy Council, approved by the Governor General on the 13th of August, 1906.

The Committee of the Privy Council have had under consideration a despatch from His Majesty's Ambassador at Washington, dated 10th July, 1906, transmitting copy of a despatch to His Majesty's Secretary of State for Foreign Affairs relating to the appointment of a joint commission to examine the question of obstructions in the St. John River.

The Minister of Public Works, to whom the said despatch has been referred, states that under date the 18th July, 1906, His Excellency the British Ambassador informed His Majesty's Secretary of State for Foreign Affairs that Mr. Loomis, Assistant-Secretary of State, had expressed the view that the United States Government could not accede to the wish of the Canadian Government to have the question above referred to dealt with by the existing International Waterways Commission, but at the same time Mr. Loomis added his belief that Congress would in the early part of its incoming session make provision for a special commission to report upon the subject. That on the 10th July, 1906, Sir H. M. Durand, His Majesty's Ambassador at Washington, transmitted to His Majesty's Secretary of State for Foreign Affairs information conveyed to him through Hon. Alvey A. Adee, acting for the Secretary of State for the United States, to the effect that Congress had made provision for the necessary expenses of the Commission above mentioned, and the following is a verbatim extract from the Diplomatic and Consular Appropriation Act, approved June 16, 1906, and containing the following provision:—

For the expenses of a joint commission to be constituted if the Government of Great Britain concurs, to investigate and report upon the conditions and uses of the Saint John River, and to make recommendations for the regulation of the use thereof by the citizens and subjects of the United States and Great Britain, according to the provisions of treaties between the two countries, twenty thousand dollars.

The Minister further states that the Parliament of Canada, during its session just brought to a close, has appropriated in its supplementary estimates an item as follows:—"International Commission, River St. John, New Brunswick, twenty thousand dollars.

"The Minister, in view of the foregoing invitation by the Government of the United States, suggests that two commissioners be hereafter appointed on behalf of the Canadian Government to act jointly with the nominees of the Government of the United States upon the subject of improvements to the St. John River.

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"The Committee concurring, advise that Your Excellency be moved to transmit a copy hereof to His Majesty's Ambassador at Washington for the information of the United States Government.

All of which is respectfully submitted for approval.

JOHN J. MCGEE,
Clerk of the Privy Council.

CERTIFIED COPY of a report of the Committee of the Privy Council, approved by His Excellency the Governor General on the 3rd December, 1908.

The Committee of the Privy Council, on the recommendation of the Minister of Public Works, advise that Messrs. Alexander P. Barnhill, K.C., and John Keeffe, merchant, both of St. John, N.B., be appointed commissioners representing His Majesty in behalf of the Canadian Government to act jointly with the representatives of the Government of the United States on the special commission authorized by Order in Council of the 13th August, 1906, to examine into the question of obstructions in the St. John River.

The Committee, on the same recommendation, further advise that Messrs. H. A. McKeown, K.C., late Attorney General of the Province of New Brunswick, and Wendall P. Jones, late Solicitor General of the Province of New Brunswick, be appointed as counsel for the commission; Parliament at its last session having made an appropriation of \$20,000 towards the expenses of such commission.

The Committee recommend that Your Excellency may be pleased to forward a copy of this Minute to His Majesty's Ambassador at Washington, for the information of the United States Government.

All of which is respectfully submitted for Your Excellency's approval.

RODOLPHE BOUDREAU,
Clerk of the Privy Council.

The Honourable
The Minister of Public Works."

On the organization of the commission in 1909, Mr. Barnhill was elected chairman, and Mr. Harold H. Murchie, of Calais, Maine, was appointed secretary.

Mr. Barnhill resigned his commission in December, 1911, and Mr. Mariner G. Teed, K.C., of St. John, N.B., was appointed in his place on the 29th of the same month, and was elected chairman.

Hon. George A. Murchie died on the first day of July, 1914, and Hon. John B. Madigan, of Houlton, Maine, was appointed to fill the vacancy on the tenth day of September, 1914.

By further instructions received from the respective Governments in February, 1910, the commission was directed to investigate and report upon the feasibility or creating storage reservoirs upon the St. John river and its tributaries, for facilitating the driving of logs.

PROCEEDINGS.

For the convenience of witnesses, and for the obtaining of documentary evidence, meetings of the commissions were held at Van Buren, Calais, Bangor, Augusta, and Houlton, within the state of Maine, and at Fredericton and St. John, in New Brunswick. The evidence, including copies of such of the exhibits as it was considered necessary or practicable to transcribe, is contained in six volumes, which, together

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with the records of the proceedings of the commission, are herewith submitted. All the original exhibits have been returned to the counsel by whom they were introduced.

The members of the commission, in order to familiarize themselves with the subject matters of investigation, and to acquire, by observation, knowledge of location and conditions upon the St. John, traversed a considerable extent of the river and of some of its tributaries.

THE RIVER.

The St. John river has a total length of about four hundred and fifty miles, and a drainage area of approximately twenty-six thousand square miles, the largest territory south of the St. Lawrence and north of the Susquehanna drained by any one river. The Southwest branch takes its rise on the international boundary between the state of Maine and the province of Quebec, and, flowing northeast, forms such boundary for about thirty miles.

The Northwest branch rises in the province of Quebec, and flows chiefly within that province, joining the Southwest branch in the state of Maine about ten miles easterly of the international boundary. From this junction the river flows wholly within the state of Maine, in a general northeasterly direction, and substantially parallel with the international boundary, for about ninety miles, to St. Francis, where it receives as a tributary the river of that name. In this distance many streams, which derive their waters chiefly from the province of Quebec, fall in from the northwest. From the southerly side the Allagash, flowing wholly within the state of Maine, joins the St. John twelve miles above the mouth of the St. Francis, and is its largest tributary, with the exception of the Arrostook. The St. Francis has its source in the province of Quebec, and flows southeasterly to the St. John. From lake Pohenagamoock (now called Boundary lake) to its mouth, a distance of about thirty miles, the middle of the channel of the St. Francis and the lakes through which it flows form part of the international boundary. From the mouth of the St. Francis the St. John flows easterly, and the international boundary, as provided by the treaty, follows the middle of the main channel for about seventy miles, to within three miles above the Grand Falls. Between these points it is augmented from the south by the Fish river, which drains a number of large lakes wholly within the state of Maine, and from the north receives several tributaries from the Canadian side, notably the Madawaska, Green and Grand rivers, which drain extensive areas in Quebec and New Brunswick.

From where the river leaves the boundary, to the Bay of Fundy, into which it empties, the St. John flows altogether within New Brunswick for a distance of about two hundred and twenty-two miles. In this stretch the Aroostook, flowing from Maine, joins the St. John about twenty miles below the Grand falls. The Tobique, Nashwaak, and Kennebecasis rivers, coming from the east and drawing their waters wholly from New Brunswick, are the principal tributaries below the Grand falls.

The ebb and flow of tide in the river, which averages about twenty-four feet at its mouth, is perceptible in a diminishing degree for ninety miles, or about five miles above Fredericton. The river is navigable for passenger and freight-carrying steamers of substantial capacity and draught from its mouth to Fredericton; and above this, for a further distance of about sixty-three miles, to Woodstock, it is navigable during the periods of spring and autumn freshets for smaller vessels of shallow draught.

From Woodstock to the Grand falls, while capable of useful navigation by small boats, the river, since being paralleled by railways, has been chiefly used as a means of floating logs, loose or in rafts.

The Grand falls, more particularly described on page (?) of this report, constitutes an insuperable barrier to all navigation, except for the passage of loose logs, which, in the driving season, go over the falls and through the rapids in tumultuous masses, some of them suffering injury by breakage.

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From the Grand falls to its source the river is capable of useful navigation for the driving of logs and for the passage of shallow boats and scows.

Above Grand falls the St. John drains about four thousand five hundred and twenty-one square miles in Maine, and four thousand one hundred and seventy-nine square miles in Quebec and New Brunswick. Of these areas probably eighty to ninety per cent are covered with forest growth.

Above Fredericton the St. John has been used chiefly as a lumberman's river. During five or six months in each year the river is ice bound, except for a few miles near its mouth.

CONDITION OF THE COUNTRY IN 1842.

At the time of the treaty in 1842 the territory drained by the St. John above the Grand falls was virgin forest, with the exception of a fringe of clearings on either bank, called the Madawaska Settlements, located in what are now the towns of Hamlin, Van Buren, Grand Isle, Madawaska, Frenchville, Fort Kent, St. John Plantation, St. Francis and Allagash, in the county of Aroostock, in Maine, and in the parishes of St. Leonard, St. Ann's, St. Basil, Madawaska, St. Hilaire, Clair and St. Francis, in the county of Madawaska, in New Brunswick, and perhaps a few isolated habitations on the Fish river and elsewhere on tributaries of the St. John. Below the Grand falls the valley of the river was in a well-settled condition, thriving towns and villages having grown up at various points, principally at Woodstock, Fredericton, Oromocto, and Gagetown, besides the seaport of the city of St. John at its mouth. At this city were located a number of saw-mills, which afforded the principal market for logs cut upon the river and its tributaries. A large business was also carried on in getting out hewn pine timber, which was obtained chiefly at the head waters and floated or driven to the city of St. John, and there exported. No lumber manufacturing for other than local purposes was carried on above Grand falls, and no railways existed beyond that point prior to 1878.

THE TREATY OF 1842.

From the date of the Treaty of Peace between Great Britain and the United States in 1783, down to the Treaty of Washington in 1842, the question of the location of the international boundary, as defined by the first-named treaty, was fraught with many difficulties, and gave rise to bitter controversies between the people of the respective countries. By the Treaty of 1842 a compromise of these difficulties, accepted by both nations, was made, and article 1 provided that the line of boundary should be as follows:—

It is hereby agreed and declared that the line of boundary shall be as follows: Beginning at the monument at the source of the river St. Croix, as designed and agreed to by the commissioners under the fifth article of the treaty of 1794 between the Governments of the United States and Great Britain; thence, north, following the exploring line run and marked by the surveyors of the two Governments in the years 1817 and 1818, under the fifth article of the Treaty of Ghent, to its intersection with the river St. John, and to the middle of the channel thereof; thence, up the middle of the main channel of the said river St. John, to the mouth of the river St. Francis; thence up the middle of the channel of the said river St. Francis, and of the lakes through which it flows, to the outlet of the lake Pohenagamook; thence, southwesterly, in a straight line to a point on the northwest branch of the river St. John, which point shall be ten miles distant from the main branch of the St. John, in a straight line, and in the nearest direction; but if the said point shall be found to be less than seven miles from the nearest point of the summit or crest of the highlands that divide those rivers which empty themselves into the river Saint

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Lawrence from those which fall into the river St. John, then the said point shall be made to recede down the said northwest branch of the river St. John to a point seven miles in a straight line from the said summit or crest; thence, in a straight line, in a course about south eight degrees west, to the point where the parallel of latitude of $46^{\circ} 25'$ north intersects the southwest branch of the St. John; thence, southerly, by the said branch, to the source of in the highlands at the Metjarmette Portage; thence, down along the said highlands which divide the waters which empty themselves into the river Saint Lawrence from those which fall into the Atlantic ocean, to the head of Hall's stream; thence, down the middle of said stream, till the line thus run intersects the old line of boundary surveyed and marked by Valentine and Collins previously to the year 1774, as the 45th degree of north latitude, and which has been known and understood to be the line of actual division between the states of New York and Vermont on one side, and the British province of Canada on the other; and, from said point of intersection, west, along the said dividing line as heretofore known and understood, to the Iroquois or St. Lawrence river.

This line of boundary was surveyed, located and marked in the years 1843-5 by Lt.-Col. J. B. Bucknall Estcourt and Mr. Albert Smith, boundary commissioners, respectively appointed for the purpose by Great Britain and the United States, and was again surveyed and marked by new and additional monument in the years 1909-10 by Messrs. James B. Baylor and C. C. Rainboth, appointed by the two Governments.

In the report of their work by Lt.-Col. Estcourt and Mr. Smith in 1847, in speaking of that portion of the boundary that traverses the St. John river, it is stated:—

The boundary runs up the middle of the channel of the river, as indicated by the maps, dividing the islands as follows: (Here follows a list of the islands allotted to the respective countries.)

The island were distributed to Great Britain or to the United States as they were found to be on the right or left of the deep channel. There was but one doubtful, case, La Septième Isle, and that was apportioned to the United States because the majority of the owners were ascertained to reside on the United States side of the river.

The line of boundary was accordingly located northearly of said island.

The island La Septième, mentioned above, is identified by witnesses produced before the commission as now called "Crook island," and is hereinafter referred to by that name.

Article III of said treaty, upon the interpretation of which some of the matters at issue depend, is as follows:—

In order to promote the interests and encourage the industry of all the inhabitants of the countries watered by the river St. John and its tributaries, whether living within the state of Maine or the province of New Brunswick, it is agreed that, where, by the provisions of the present treaty, the river St. John is declared to be the line of boundary, the navigation of the said river shall be free and open to both parties, and shall in no way be obstructed by either; that all the produce of the forest, in logs, lumber, timber, boards, staves, or shingles, or of agriculture, not being manufactured, grown on any of those parts of the state of Maine watered by the river St. John, or by its tributaries, of which fact reasonable evidence shall, if required, be produced, shall have free access into and through the said river and its said tributaries, having their source within the state of Maine, to and from the seaport at the mouth of said river St. John, and to and round the falls of the said river, either by boats, rafts, or other conveyance; that when within the province of New Brunswick the said produce shall be dealt with as if it were the produce of the said

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province; that, in like manner, the inhabitants of the territory of the upper St. John determined by this treaty to belong to Her Britannic Majesty, shall have free access to and through the river for their produce, in those parts where the said river runs wholly through the state of Maine: Provided always, that this agreement shall give no right to either party to interfere with any regulations not inconsistent with the terms of this treaty which the Governments, respectively, of Maine or of New Brunswick may make respecting the navigation of the said river, where both banks thereof shall belong to the same party.

This river, up to the time of the building of the railways, being the only outlet to the markets of the world, the United States, by statute known as the Pike Act, enacted in 1866, allowed lumber manufactured in New Brunswick by American citizens, from logs cut in Maine, to enter the United States free of duty. A number of American saw-mills were established at St. John, and at least one at Fredericton. The supply of lumber for these mills was cut upon lands within the state of Maine and Canada, and floated down the St. John river and its tributaries, there to be manufactured for export.

CONDITIONS OF THE COUNTRY SINCE 1842.

Since 1842 changes have taken place in the occupation of the valley of the St. John and its tributaries above Grand Falls. In large sections the land is cleared and settled; thrifty and productive farms line the banks of the rivers, and prosperous and growing towns have arisen, notably St. Leonard, St. Ann's, St. Basil, Edmundston, St. Hilaire, and Clair, in New Brunswick, and Van Buren, Grand Isle, Madawaska, Frenchville, Fort Kent, St. John and St. Francis, in Maine, and similar development is noted in progress on the St. Francis. The completion of the New Brunswick Railway (now part of the Canadian Pacific Railway system) in 1878, from Fredericton to Edmundston, in New Brunswick, and the building of the Temiscouata railway from Rivière-du-Loup, on the St. Lawrence, through Edmundston to Connors, near the mouth of the St. Francis, on the northerly bank, afforded, for the first time, to the inhabitants of this section of this country, an outlet other than by the river. In Maine the Bangor & Aroostook railroad was extended to Van Buren in 1899, to Fort Kent in 1902, and to St. Francis in 1912. The International railway, from Campbellton to St. Leonard, built about 1910, and the National Transcontinental railway, paralleling the St. John and St. Francis from lake Pohenagamook to Grand falls, recently completed, will open up additional sections in this region, fast growing into a very rich and productive community, extending across the international boundary. The construction of these railways, with the transport they afford for manufactures, has naturally led to the development of large milling industries, such as were never before commercially possible, upon either side of the river, which here is situated so near the source of supply in the immense forest tracts upon the upper waters of the St. John and St. Francis and their tributaries in Maine, Quebec, and New Brunswick.

BRIDGES.

Under the authority of the Legislature of New Brunswick, highway bridges have been built across the river and are maintained by the province, at St. John, Fredericton, Hawkshaw, Woodstock, Florenceville, Andover, and Grand Falls, which points are wholly in New Brunswick. There are also railway bridges within the province, constructed with the authority of the Parliament of Canada, at St. John, Fredericton, Woodstock, Andover, and Grand Falls. On that portion of the river where it forms the international boundary two bridges, one a railway and the other a highway bridge,

have been built between Van Buren and St. Leonard, under authority of the Congress of the United States and the Parliament of Canada. All of said bridges, except those at St. John and one at Grand falls, are supported by piers in the river. The building of the railway bridge at Van Buren has been approved by the commission in a prior interim report, dated the 31st day of May, 1913.

A foot-bridge, having piers in the river, has been constructed and is maintained by private enterprise, between Fort Kent, Maine, and Clair, New Brunswick. For this no legislative authority was obtained. None of the above-mentioned bridges existed in 1842.

THE LUMBER INDUSTRY.

The lumber floated down the rivers consists of spruce, pine, and cedar. The logs are cut in the fall and winter, piled upon the shores, and in the spring driven down the tributaries into the main river, where logs of the various owners necessarily become intermingled. The driving companies, hereinafter mentioned, take charge of and handle all logs as soon as the same come within their jurisdiction, except for about four miles where they pass through the sorting works and holding ground of the St. John Lumber Company, at Van Buren, Maine. Though all logs are intended to bear the marks of the owners, before leaving the woods, it invariably happens, in all logging operations, that a portion are not marked, and these are classed as "no mark" or "prize" logs.

For about sixty years prior to 1904 the larger portion of the logs cut upon the St. John and its tributaries was driven to booms near Fredericton. Sorting works were there established in 1844 by the Fredericton Boom Company, incorporated by the Legislature of New Brunswick, and have since been operated during each season. The sorting is now carried on by the St. John River Log Driving Company, which was incorporated by statute of New Brunswick in 1886, by which, and various Acts passed from time to time in amendment thereof, it is, in addition to the powers theretofore enjoyed by the Fredericton Boom Company as to booming and sorting, purported to be given the exclusive right to drive logs upon the river St. John from the Grand falls to Fredericton, a distance of about one hundred and thirty-eight miles (see evidence page 964).

In that portion of the river which lies between the Grand Falls and the mouth of the Allagash, a distance of eighty-six miles, the driving of logs is authorized to be controlled by the Madawaska Log Driving Company. This company was incorporated under the laws of Maine and also by the Legislature of New Brunswick, and the charters purport to give powers similar to those of the St. John River Log Driving Company, in respect to the driving of logs (see evidence page 772). In the year 1911, by the Private and Special Laws of Maine, chap. 258, the Upper St. John Log Driving Company was incorporated for the driving of logs from the junction of Baker branch and the Southwest branch of the St. John to the mouth of the Allagash, a distance of about ninety miles, lying wholly within the state of Maine. The charter thereof purports to give powers similar to those above mentioned.

These corporations are not organized for gain, but are co-operative, the members consisting of the various parties having logs in the drive over which the respective corporations have jurisdiction, and the tolls are assessed in proportion to the ownership of the logs, to provide for maintenance and operating expenses only.

Because of the greatly increased size of the river and the requirements of other navigation, between Fredericton and St. John, the only feasible way of transporting the logs by water is in rafts or booms, towed by tugs. Logs of the different owners are separated at the booms of the St. John River Log Driving Company. By means of a sheer boom attached to the western shore, about ten miles above Fredericton, and another fastened to a pier in the western channel, a little below, logs coming down the

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river are sheered into the sorting works of the company on the easterly side of several islands, and the booms are so arranged that they can be opened to admit of the passage of rafts and boats. Men are stationed on these sheer booms day and night, while the booms are set, for the purpose of opening them to accommodate river traffic, which can then proceed along the western channel. When rafts and boats are going through, quantities of loose logs necessarily pass by also, and these are caught and sorted at other booms of the company, below Fredericton. The logs caught at the upper booms are sorted on the easterly side of the river, behind the islands, and for the purpose of sorting there are many permanent piers in that part of the river, closing the eastern channel. As the sorting proceeds, the logs of the various owners, as determined by their marks, are separated and made up into rafts.

It is the general usage and custom on lumber rivers where logs of various owners become intermingled, to sell the prize logs and divide the proceeds among said owners in proportion to the total quantity of the logs of such owners in the general drive.

According to the charter of the St. John River Log Driving Company, money received from the sale of prize logs is distributed in proportion to the scale of market logs passing through said boom. As the St. John Lumber Company, prior to 1910, removed at Van Buren from the drive all its marked logs, allowing all the unmarked logs to continue with the drive, its proportion of said prize log funds depended only on such marked logs as might accidentally pass down the river.

This is inequitable, and the charter of the said company should be amended to conform to changed conditions on the river.

Since 1910 the St. John Lumber Company, in reprisal for this alleged grievance, has stopped and taken all prize logs coming down the river to Van Buren, of which they give no account.

The commission thinks this practice also inequitable.

From early times in the history of New Brunswick, the lumber industry in the city of St. John was of an extensive nature, and for many years there has been sawn there about one hundred and forty million feet of logs, board measure, each year, of which approximately ninety million are brought from above the Grand falls. Fourteen mills are being operated in and near the city, and some eight hundred and fifty men are employed directly therein, and many more in connection with the business. It appears from the evidence that approximately one million dollars (\$1,000,000) is invested in mill plants in St. John. Of the logs sawn there, about two-fifths are cut in Maine, above St. Francis. Before the advent of the railways along the international boundary, small mills were operated at various points upon the river between Fredericton and St. Francis, for the manufacture of lumber for local purposes. These mills obtained their logs chiefly from neighbouring farmers, who were gradually clearing their lands, and the quantity was inconsiderable.

The stimulus given by the railways, above mentioned, to the manufacture of lumber nearer to the source of supply upon the upper waters of the river, naturally led to the enlargement or erection of plants above Grand falls, and there are now eighteen saw-mills in operation upon that portion of the river between the boundary line, about three miles above Grand falls, and lake Pohenagamook, some of which are of large capacity.

Prior to the year 1904 the logs for mills upon this stretch of river were held back by means of booms at the mouths of the brooks, until those destined for the Fredericton booms had passed.

In 1904 the St. John Lumber Company began the erection of a large lumber manufacturing plant at Van Buren, consisting of three mills, and it was impracticable to deal with the large number of logs required for this industry as had been done with the logs for the smaller mills on this stretch of the river; the unavoidable mingling of the logs destined for the Fredericton booms necessitated the sorting of the logs at Van

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Buren. This gave rise to the difficulties and complications hereinafter dealt with under a separate heading.

In the mills, plant, booms, piers, and sorting works of the St. John Lumber Company at Van Buren there is invested approximately seven hundred and fifty thousand dollars (\$750,000), and the mills have a daily capacity of about two hundred and fifty thousand feet of long lumber and one hundred and fifty thousand shingles, and the logs required for this output is between fifty and sixty million feet, board measure, annually. The company employs about four hundred men in the operation of the mills, and about fifteen hundred in the cutting and driving of the logs, besides necessary teams and horses.

LOG DRIVING CONDITIONS.

Little effort has thus far been made upon the St. John and its tributaries to remove the obstructions that nature has left in the channel, or to conserve and regulate the flow of the surplus water. The log-driving conditions are therefore worse than upon most of the lumber rivers. A dam has recently been constructed by the St. John Lumber Company at the foot of Long lake, upon the Allagash waters, which has proved of great benefit. For lack of storage the river falls about as rapidly as it rises, and the spring freshets are soon exhausted. Varying somewhat from year to year, according to the depth of the snow, and the length of the rainy season, the driving period usually lasts from about May first to the early part of July. Seldom is the rainfall sufficient to make driving practicable during the summer or autumn months. When the water has fallen sufficiently to expose the boulders, ledges, gravel bars and shallows in the channel of the river, driving is expensive, difficult, and usually impossible. Below the Grand falls the conditions in the channel are much worse than they are between the Grand falls and the mouth of the Allagash. It is therefore important that logs destined for Fredericton or St. John should go forward as early as possible. The driving corporations place many sheer booms in the river, which serve to keep the logs in the channel and improve conditions somewhat. They do not, however, minimize the necessity of channel improvement and the conservation of water.

For log-driving, extreme high water is no more to be desired than low water, as the experts who have appeared before your Commission all agree. With the obstructions removed, less water will be required to keep the logs afloat, and with the surplus water detained in the many large lakes tributary to the river to be released as needed, driving will be easy and practicable.

PIERS, BOOMS AND SORTING WORKS AT VAN BUREN.

The St. John Lumber Company was organized under the general laws of the state of Maine, November 26, 1902 (see evidence, page 1564).

An Act of the Legislature of 1903, of said state, purported to authorize this company to build piers, booms, and sorting works in the St. John river, within the town of Van Buren, in Maine, being within the boundary stretch of the river; and the powers so granted were extended by the Maine Legislature March 8, 1905 (see evidence, page 1568).

Acting under this legislation, the St. John Lumber Company built and maintains the works hereinafter described, within said boundary stretch.

Between Van Buren, Maine, and St. Ann's, N.B., are three islands lying practically along the middle of the river, which here varies in width from one thousand to fifteen hundred feet. The largest of these is Crock island, formerly called La Septième, situate about five hundred feet from either shore. The depth of water is about the same on both sides. Below Crock island, and separated from it by a space

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of about one and a half miles, lies Upper island, and below the latter, at a distance of about two hundred and fifty feet, is Reid's island. These islands are wholly on the United States side of the boundary, and the ownership of them, or their shore privileges, has been acquired by the St. John Lumber Company.

This company has also acquired a portion of land on the Canadian shore, about a mile and a quarter above the head of Crock island, sufficient to afford anchorage for sheer booms, and from the Canadian shore a series of three sheer booms are hung by the company transversely across the channel, which have the effect, while intermingled logs are running in the river, of diverting them into their sorting works, enclosed between the United States shore of the river and Crock island, and a series of permanent piers and booms extending down stream some three thousand feet. Here the company, at its own expense, sorts out its own logs from the general drive; the logs destined for the Fredericton booms being turned out into the channel between the islands and the Canadian shore, and the company's logs being turned into holding grounds which extend from the lower end of the sorting works to the lower end of Reid's island, a distance of about two miles. These holding grounds are formed by permanent piers in the river, with connecting booms extending down the river to the head of Reid's island, enclosing Upper island, and by piers and booms from the foot of Reid's island to the United States shore. The piers and connecting booms from the lower end of the sorting works to the head of Reid's island enclose, for the exclusive use of the St. John Lumber Company, from two-thirds on the United States side of the boundary.

The sorting works consist of a series of parallel booms, with walks or planks elevated above them, on which the men stand to turn the logs until the marks can be inspected. There are a series of windows or openings on each side, through which the logs are pushed by the men, with pike-poles, either into the main river or into the booms of the St. John Lumber Company, in accordance with their destination. The sorting works are lighted by electric lights, so that the work can go on both day and night. There is an opening also at the slip of the mill, through which logs belonging to down-river parties, that have escaped the notice of the sorters, may be pushed into the river at that point.

A plan of the river, showing these piers, booms and works, is herewith interleaved.

The commissioners on behalf of Canada maintain that the above mentioned legislation is *ultra vires* the Legislature of Maine, and that the above described piers, booms and works so established and maintained in the river, having no other authorization, are an obstruction to navigation and a violation of the provisions of article III of the Treaty of Washington of 1842.

The commissioners on behalf of the United States maintain that said legislation is *intra vires*, and that the maintenance of said piers, booms and works thereunder is a reasonable use of the river, and not an obstruction to navigation in violation of article III.

During the first six or seven years after the St. John Lumber Company began the diversion of all intermingled logs coming down the river, large jams occurred at the sorting works. These jams caused considerable delay in the freeing of the logs destined for the Fredericton booms, and, when the water in the river was rapidly falling, added materially to the expense of the drive in the lower reaches of the river. This detention, together with want of care in the sorting of the logs by the St. John Lumber Company, and the unauthorized sawing by said company of logs of other parties, occasioned much complaint. Evidence was taken in respect to the conduct of the company in these matters, and also as to the jams of logs above mentioned, and the means that might be provided for bettering conditions.

For the last three or four years the company has been able to sort the logs practically as fast as they run, and no serious delay has been experienced.

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The evidence taken in respect of the management of these sorting works emphasizes the necessity of having any such works operated by disinterested parties.

Mills of the capacity of those at Van Buren, the logs for which are driven intermingled with the logs of other owners, cannot be operated without sorting works. It is impossible to sort logs, in a large river like the St. John, where the current is swift and powerful, without permanent, substantial piers and booms.

During some years the St. John Lumber Company used the river between Grand Isle, situated a few miles above the sorting works above described, and the United States shore, for the purpose of holding a portion of the intermingled logs until such time as the sorting works at Crock island could handle them. Sheer booms, attached to the Canadian shore above Grand Isle, deflected such logs into this holding ground.

ST. FRANCIS RIVER.

The boundary between the state of Maine and the provinces of New Brunswick and Quebec, from the mouth of the St. Francis, runs up the middle of the channel of that river, and the lakes through which it flows, a distance of about thirty miles, to the outlet of lake Pohenagamook, or Boundary lake.

In April, 1913, the Blue River Lumber Company was incorporated under the Companies Act of Canada; but by its charter or otherwise in Canada obtained no authority to place any dams, booms or obstructions in the St. Francis river.

In March, 1913, the Legislature of Maine, by Act effective July 12, 1913, purported to authorize certain individuals and their assigns to locate, erect, maintain and operate a dam in the St. Francis river from any point along the bank or shore of said river to the boundary line in said river between the United States and Canada, and to connect said dam with a dam that might be, under legal authority, built on the opposite shore of said river, in the province of Quebec, in the Dominion of Canada, and to build, maintain and operate side dams, wing dams, sluices, conduits, booms, side booms, sheer booms, piers, wharves, slips, buildings and other works, within the state of Maine, between said dam and the foot of the island opposite the mouth of Blue river.

The individuals to whom the above-mentioned rights were granted, or professed to be granted, by Maine, assigned the said rights to the Blue River Lumber Company, and that company erected, near the mouth of Blue river, on the Canadian side of the St. Francis, a saw-mill having an annual capacity of about eight million feet of long lumber, twenty-five thousand ties, and twenty-five millions of shingles. To retain in the river the logs for this output, and to form a mill-pond, the company has built and maintains a dam across the St. Francis, about three feet high in the centre, with flashboards to give three feet more height to the water, preventing all passage in low water by means of the river, and has also located a number of permanent piers in the river, thus appropriating to its exclusive use the river from shore to shore for about one mile above said dam. The facilities for export to this industry are given by the National Transcontinental railway, which parallels the St. Francis for some distance.

The country on either side of the St. Francis is sparsely settled, and is largely covered with forest growth, except at the thriving village of Blue River, on the Canadian side, the building up of which is attributable to the industry of the Blue River Lumber Company and the existence of the Transcontinental railway.

GRAND FALLS.

At this point is said to be the largest undeveloped water-power east of Niagara. Here the main St. John makes a precipitous plunge of about sixty-five feet, and then continues through a narrow, winding gorge for about three-quarters of a mile. The total fall, including the rapids, is about one hundred and twenty feet.

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The utilization of this immense power that nature has placed at their disposal would unquestionably greatly stimulate the prosperity of the people of both countries. The storage afforded in both countries is a necessary factor, for the use of which harmonious action by both Governments is requisite. With great natural advantages, unusual railroad facilities, and with an abundance of forest products available, there would seem to be every reason for believing that, with proper development of this power, aided by such conservation of water as the evidence shows to be feasible, this section would witness a remarkable increase in wealth and population.

Appropriate legislation would safeguard the interests of the people of both countries and ensure to each a proper measure of enjoyment. Such development of this power, with the accompanying storage requisite thereto, would naturally improve and in no way impair the navigation of the river.

TELOS CANAL AND CHAMBERLAIN DAM.

This canal and dam artificially divert to the Penobscot river waters naturally tributary to the St. John. The canal is situate in township No. 6, range 11, in the county of Piscataquis, Maine, between Telos lake, of the Allagash system, and Webster lake, on the headwaters of the East branch of the Penobscot. Chamberlain dam, designed to raise the water in Chamberlain, Telosinis, and Telos lakes, and force its flow through the canal, is situate in township No. 7, range 13, at the outlet of Chamberlain lake into the Allagash river. The height of land or watershed between Telos and Webster lakes, intersected by the canal, is on the line of boundary between Maine and New Brunswick, as claimed by the British Government prior to the settlement of the boundary dispute by the Treaty of 1842, when this watershed, as well as the whole district watered by the Allagash and its lakes, was confirmed as territory of the United States. At the lowest point this divide was, before the construction of the canal, about six feet above the water level of Telos lake; and the distance from Telos to Webster lake, which lies about forty feet lower in elevation, does not exceed a mile. The greatest depth of cut required for the canal was at a point about sixty rods from Telos, whence the land sloped in natural valley towards Webster.

The material of the divide, excavated for the canal, appears, from present surface indications, from the report of a survey made by W. P. Parrott in 1843, as well as from evidence of persons engaged in the construction of the canal, given before a Legislative Committee of Maine, in 1846, to have been chiefly boulders, ledge and clay, covered with a growth of trees.

The length of cut necessary to afford the watercourse extended from Telos towards Webster about seventy rods. The width or original excavation appears to have been from fifteen to twenty-five feet, but probable later widening of the cut, and the erosion of the soil, caused by the flow of water, has increased the size of the canal, which is now about forty feet in width. A dam was built at the canal, to regulate and control the flow of water. The present dam at this point is two hundred and twenty-five feet long and about ten feet high. It has three gates or sluices, for the passage of water and lumber, one of which is eleven feet in width, and the other two are fourteen feet in width. Chamberlain dam, without which the canal and regulating dam at Telos would be practically inoperative, has in its present state a length of two hundred and fifty feet and a height of about eleven feet. It has two gates, each eight feet in width, of which the sill is but seven inches lower than the sill of the gate in Telos dam.

In 1910 the then members of the Commission personally inspected the canal and dams above mentioned.

The Allagash river, the largest tributary of the St. John within the state of Maine, with the exception of the Aroostock, has as its source a number of lakes. Of these, Allagash lake, the highest in elevation, is about three miles in length and two in width. Lying lower, three other lakes—Telos, Telosinis and Chamberlain—

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formerly connected by short thoroughfares of water, are now practically one, by reason of the rise of water caused by the dam at the outlet of Chamberlain into the Allagash river, and have a length of eighteen miles and a width of from one to three miles; and, together with Allagash lake, which also flows into Chamberlain, have a surface area of about twenty-eight and a half square miles and a drainage area of two hundred and seventy square miles.

A detailed description of these lakes, and of the canal and dam as at present existing, will be found in the appendix to the engineers' report, pages 14 and 18, in the tables of such report, and in plans Nos. 1, 3, 4 and 13, accompanying the same.

In respect to the disputed territory, an arrangement was entered into between the Governments of Great Britain and the United States, pending settlement of the boundary question. Concerning this arrangement misunderstandings arose and were finally dealt with by a memorandum dated the 27th day of February, 1839, signed by Mr. Fox, Minister Plenipotentiary of Her Britannic Majesty, and Mr. Forsyth, Secretary of the United States, wherein, *inter alia*, it was declared:—

Her Majesty's authorities consider it to have been understood and agreed upon by the two Governments that the territory in dispute between Great Britain and the United States, on the northeastern frontier, should remain exclusively under British jurisdiction until the final settlement of the boundary question.

The United States Government have not understood the above agreement in the same sense, but consider on the contrary that there has been no agreement whatever for the exercise by Great Britain of exclusive jurisdiction over the disputed territory or any portion thereof, but a mutual understanding, that, pending the negotiation, the jurisdiction then exercised by either party over small portions of the territory in dispute, should not be enlarged, but be continued merely for the preservation of local tranquillity and the public property, both forbearing, as far as practicable, to exert any authority; and when any should be exercised by either, placing upon the conduct of each other the most favourable construction.

This memorandum was, by direction of the President, transmitted by the Secretary of State of the United States to the Governor of Maine, with the following letter:—

DEPARTMENT OF STATE, February 27, 1839.

SIR,—I have the honour by direction of the president to forward to you a memorandum signed by me as the Secretary of State and by the British Minister, the terms of which you will perceive are recommended earnestly to the Government of Maine and to the Provincial Government of New Brunswick. The President anxiously desires that they should be complied with on the part of the state of Maine as he is satisfied that they are entirely consistent with the original understanding between the Government of Great Britain and the United States, when the arbitration began, and with the honour and permanent interest of the State.

He requires that you will give immediate notice to the Lieutenant-Governor of New Brunswick that this memorandum has been received as soon as it reaches your hands and furnish him with a copy of it.

I am, sir,

With great respect, Your Excellency,

JOHN FORSYTH.

His Excellency,

JOHN FAIRFIELD, Governor of Maine.

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The terms recommended were concurred in by the Governments of Maine and New Brunswick, as appears by subsequent correspondence, which with the full text of the memorandum, is to be found on page 2554 of the evidence.

On June 18, 1841, Sir William M. G. Colebrooke, Governor of the province of New Brunswick, wrote to Lord John Russell, Secretary of State for the Colonies of Great Britain, the following letter:—

GOVERNMENT HOUSE, June 18, 1841.

MY LORD,—With reference to my dispatch, dated June 14, recommending an early settlement of the boundary question by drawing a line which might be agreed upon as mutually convenient, I beg to observe that I have not failed to consider the advantages of a line of separation drawn from the due north line of Mars' hill to the confluence of the St. Francis or Fish river with the St. John's.

Circumstances might at one time have induced the Americans to assent to such a line, and, if now attainable, it would undoubtedly be preferable to the line which I have proposed from the point where the north line intersects the Restook; but the settlement of the lands south of that river by the people of Maine would probably lead them to oppose it, and such opposition would, as I apprehend, effectually prevent the Government of the United States from acceding to it.

The encroachments which have taken place, and the embarrassments they have occasioned, induce me to consider that no time should be lost in effecting such a settlement as may now be practicable, and that would not compromise the just rights of the settlers on both banks of the St. John's river at Madawaska, who have a just claim to the protection of the British Government.

There is another question which has been mooted regarding the navigation of the St. John's by the Americans.

The project alluded to in the Report of the British Consul in Maine, inclosed with Your Lordship's dispatch of the 27th of May, of cutting a canal to unite the waters of the Allagash with those of the Penobscot, would indicate that the Americans are looking to other means of transporting the lumber to their markets.

The St. John's would, however, still be the most convenient channel for the valuable timber cut near the Restook; and if any equivalent advantage would be obtained in the settlement of the boundary, I am of opinion that the privilege might be accorded to the Americans of floating their timber down the St. John's it being understood that the privilege should be strictly limited to that object.

I have, etc.,

W. M. G. COLEBROOKE.

In the years 1840 and 1841 several applications were made to the Legislature of Maine by citizens of the United States interested in lumber lands bordering upon the lakes above mentioned, for a charter granting leave to dig a canal between Telos and Webster lakes, which, by means of a dam at the outlet of Chamberlain, would, as represented by the applicants, cause the waters to flow away from the St. John into the Penobscot, and to serve the driving of lumber from this district to Bangor, within the undisputed territory of the state. The legislation asked for failed of passage.

On the 28th of September, 1840, parties interested in the project obtained a deed, executed by the land agents of the commonwealth of Massachusetts and the state of Maine, by virtue of the authority by law in them vested as such agents, and in behalf of the states, to Lewis Hancock, of township No. 6, in range 11, of the townships west of the east line of the state of Maine, which contains the following reservation:—

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Reserving the rights of the states, or any company legally authorized, to make a canal and sluice from lake Telos to Webster pond, and is made by any individual or company, a right in the states at any time hereafter to pay the expense incurred in making the sluice, together with the legal interest thereon, and open the same free to all persons.

An extended copy of which deed will be found on page 2442 of the evidence.

In the fall of 1841 the canal was dug by the owners of the land, and a dam built at the outlet of Chamberlain lake to raise the water and cause to flow through the canal into Webster lake, and a regulating dam was also placed at the canal, thus turning for the first time the waters of those lakes into the Benobscot.

The builders of these works applied to the Legislature of Maine, in February, 1842, for an Act of Incorporation with the right to fix tolls upon lumber passing through the canal, and this was not granted.

The petitions in support of these applications, and all other documentary evidence in respect thereto, and of the action of the legislature thereon, will be found on page 2446 of the evidence.

In 1843 the dam at Chamberlain was carried away by a freshet. A new dam was constructed, but this proved to be of insufficient height for the diversion of the water. This second dam became partially destroyed in or before the year 1845, and a third one was built, which is described as a permanent dam, with no gates.

In 1846 the Legislature of Maine, incorporated The Telos Canal Company (see evidence, page 1999), and enacted:—

Section 2. Said corporation shall have the right, and it shall be their duty, to construct, maintain and keep open and in repair, as already constructed, a proper sluiceway or canal, with suitable dam or dams, gates and other erections for the passage of water, logs and lumber, between Telos lake and Webster pond.

By various Acts since passed, additional thereto and amendatory thereof, the legislature has recognized the existence of these works, and the said company has, with the exceptions hereinafter mentioned, controlled the flow of the waters of the said lakes.

In the year 1886 certain British subject forcibly raised the gates of Chamberlain dam in the driving season, and, by means of the water so released, drives of logs stranded in the Allagash and St. John were driven to Grand falls. Again, in 1903, certain citizens of the United States, having logs in the Allagash to be driven to mills at Van Buren, partially destroyed the gates of Chamberlain dam with dynamite.

At the session of the Legislature of Maine in 1903, a Bill was introduced intituled "An Act to incorporate the East Branch Improvement Company," from which it appeared that the company seeking incorporation asked, among other things, powers to the effect of which, if granted, would be to permit the company to deepen Telos canal, increase the height of the dams, and thereby more completely divert the upper waters of the Allagash into the Penobscot river. Objections to this Bill were urged before the legislature on behalf of the lumber operators of the St. John and Allagash, and the matter was also brought to the attention of the Government of Canada. A report of the Committee of the Privy Council of Canada, approved by the Governor General on March 10, 1903, protesting against this proposed legislation, based upon the necessarily resulting injury to navigation in the St. John river, the consequent violation of article 111 of the Treaty of 1842, and the prejudicial effect upon the lumber industry in the Allagash and St. John rivers, was forwarded to the British Ambassador at Washington, with instructions to draw the attention of the Government of the United States to the provisions of the Bill, with a request that steps might be taken to obviate the serious result apprehended from the passage of the proposed legislation. Communication of this objection or protest on the part of the Government of Canada was made

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by the British Ambassador to the Secretary of State of the United States, on the 23rd day of March, 1903 (see evidence, page 2909). Examination of the Bill as presented, and of the Act as finally passed, discloses that certain of the powers asked for were not granted, and a clause was added providing that nothing in the Act should be construed as giving the company the right to increase the height of the dam at the outlet of Chamberlain lake, or enlarge the Telos canal as constructed, and on the third day of April, 1903, the Secretary of State of the United States addressed a communication to the British Ambassador, inclosing a certified copy of the Act passed by the Legislature of Maine, and approved by the Governor on the 18th of March, intituled, "An Act to incorporate the East Branch Improvement Company," and stated that the Governor of Maine, in transmitting the certified copy of said Act, had remarked that it appears to contain none of the provisions respecting the diversion of the waters of the Allagash and St. John rivers, against which protest had been made by the Ambassador.

The evidence shows that during the log-driving period, which usually extends beyond the freshet season, all the run-off from the Chamberlain basin is utilized exclusively for the driving of logs through the Telos canal, and for increasing the supply of water in the Penobscot.

The tables in the engineers' report indicate that the drainage area of Chamberlain lake, so diverted to the Penobscot, is two hundred and seventy square miles, and that the whole drainage area of the Allagash, including Chamberlain, is fourteen hundred and seventy-six square miles. The lake surface of Chamberlain and its tributary lakes is 29.5 square miles, and the surface of all lakes on the Allagash system, including Chamberlain, is 63.6 square miles, at high water.

The two Canadian commissioners, and Mr. Keegan, one of the United States commissioners, maintain:—

(1) That the diversion of the Chamberlain lake waters naturally tributary to the St. John river is an interference with the navigable capacity of said river, and a violation of the provisions of the existing treaties between the two countries.

(2) That the legislation of Maine authorizing such division is an interference with international rights, and is *ultra vires*.

(3) That no prescriptive right to continue such diversion has been or can be acquired.

Mr. Madigan, commissioner on behalf of the United States, maintains:—

(1) That the state of Maine, the Telos Canal Company and those under whom it claims, and the riparian proprietors on the Penobscot river, have the right to continue said dams and canal as at present maintained, and to divert the waters of the Chamberlain lake system into said Penobscot.

(2) That the legislation of Maine, authorizing the construction and maintenance of said dams and canal and the diversion of said waters, is *ultra vires*.

3) That a right to maintain said dams and canal, and to continue the diversion of said waters, as at present, could be and has been acquired by prescription and that the same is not a violation of any treaties between the two countries.

STORAGE RESERVOIRS.

At its inception your commissioners did not construe the scope of the commission as including the question of reservoiring the St. John and its tributaries for log-driving purposes; but, later, when the work of the commission upon the other questions involved in the inquiry was well advanced, instructions were received from both Governments to examine and report upon the desirability of constructing dams for the storage of the

surplus waters of the river, or waters tributary thereto, for the purpose of facilitating the floating of logs in the St. John river.

For obtaining the data requisite for such investigation, and to act in an advisory capacity to the commission in this respect, a board of consulting engineers, composed of Mr. Hardy S. Ferguson, C.E., named on behalf of the United States, and Mr. S. Jefferson Chapleau, C.E., named on behalf of Canada, was appointed by the commission in April, 1910. Under them a field staff was organized, with Mr. Marcus H. Ranney, C.E., as chief engineer.

The work required extensive surveys and the accumulation of data and evidence from many sources. The engineers were engaged in their investigation for a period of some two and one-half years, and a large expense was unavoidable in view of the great extent of the river and its tributaries and the large number of lake the waters of which can be conserved.

Previous surveys of this region being somewhat fragmentary, the engineers, while availing themselves of such information as was afforded, were obliged to make extensive further surveys and investigations to obtain data for their report to the commission.

The work of the engineers, and the taking by the commission of much evidence from practical river drivers and operators, upon this important subject, necessarily protracted the inquiry and has delayed the commission's report.

In the opinion of the commissioners both Governments will be amply repaid for all expense of the work. Its results demonstrate that the immense conservation possibilities, for water purposes as well as log-driving, both in the United State and in Canada, which is practicable and feasible, need but development to add to both countries extensive industries, to multiply the wealth and largely increase the population on both side of the international boundary.

The report of the engineers, herewith submitted, also gives much valuable information in respect to the reservoiring of the river for power development.

In consideration of the storage for log-driving purposes, for convenience the commission has divided the river into three parts, and have not included the Chamberlain Lake system, which is elsewhere dealt with.

First.—From its source to a point just above the mouth of the Allagash.

Second.—From such point to Grand falls, and the Allagash river below Chamberlain lake.

Third.—From Grand falls to the sea.

First.—This is called the Upper St. John, and has a drainage area of twenty-eight hundred and fifty-three square miles. There are four principal branches at what might be called its source, the farthest up being the Southwest branch, which forms the boundary between Canada and the United States for thirty miles, and the Southeast branch, having their junction about one hundred miles above the mouth of the Allagash; the others being the South branch and the Northwest branch, which flow in twelve miles and twenty-two miles, respectively, farther down. |

The conditions for driving lumber on the Upper St. John are different from those existing on most of the tributaries of the river lower down. There is practically no natural storage. The lake surface amounts to only two-tenths of one per cent of the drainage area, as against six per cent on the Fish river, four per cent on the Mada-waska, and three per cent on the Allagash. Consequently, the flood waters of spring run off rapidly, and often before the logs are out of the smaller brooks. The water begins to subside about the middle of May, while usually the logs do not reach the lower end of this section before the first week in June. The commission, therefore, in its recommendation in respect to this part of the river, have had regard first to the driving of logs therein, although the storage recommended will also have a beneficial effect farther down.

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It frequently happens that large quantities of logs are stranded in this section. With the reservoirs hereinafter recommended, and such channel improvements mentioned by the engineers as experience may show to be necessary, driving may be made safe on the Upper St. John.

There are four lakes: Depot lake, on the Big Black river; English lake, on the Northwest branch, and St. John Pond and Baker lake, on the South branch. St. John pond is near the source of the South branch, and has a drainage area of fifty-six square miles. By the construction of a dam at the foot of this lake, conserving the water to the highest practicable pitch, six hundred and forty-four million cubic feet can be stored.

Baker lake, situated some twelve miles lower down the South branch, has a drainage area, including that of St. John pond, of one hundred and eighty-four square miles. Eight hundred and thirty-six million cubic feet of water can be here stored to ordinary high-water mark. This is also recommended.

The commission also recommends the construction of a dam at a point about four miles below the junction of the Southwest and Southeast branches, to store one thousand million cubic feet. There is drainage area above this proposed dam of two hundred and seventy square miles.

These three reservoirs, St. John pond, Baker lake, and the Southwest and Southeast branches will, it is believed, supply sufficient water to carry the logs, with a reasonable degree of safety, down as far as the mouth of the Big Black river, which is thirty miles above the Allagash.

The engineers have advised the construction of a dam on the Big Black river, about six miles above the mouth, which will conserve two thousand million cubic feet of water, for the purpose of facilitating driving between that river and the mouth of the Allagash, and also for assistance below. The commission concurs in this.

It is estimated that these dams will fill once every season, and perhaps twice.

Second.—In this section the engineers have made more complete surveys, having in view not only the storage of water for log-driving purposes, but also the possibility of power development.

That the natural reservoirs of the river accomplish but little in holding back the spring freshets is shown by the fact that, as estimated by the engineers, there has been at Grand falls a flowage of about two hundred and twenty thousand second-feet at highest water, and of probably one thousand second-feet at lowest water.

The engineers estimate that if a flowage of forty-five hundred second-feet at Fort Kent could be maintained during the month of June, and eight thousand second feet at Grand falls during the month of July, in each year, all the logs cut above Grand falls can be easily driven from the mouth of the Allagash to their destination.

It has been found from gauge readings extending over a certain number of years that there is usually forty-five hundred second-feet at Fort Kent throughout the month of June. At Grand falls the lowest during the month of July has been thirty-nine hundred and sixty second-feet. Taking the lowest water in the years over which the readings extend, it will be necessary to supply seven hundred second-feet during the month of June at Fort Kent, and four thousand and forty second-feet during the month of July at Grand falls. It is estimated that the reservoirs recommend on the Upper St. John will supply what is required at Fort Kent, and for the four thousand and forty second-feet at Grand falls, ten thousand three hundred and sixty-eight million cubic feet of additional stored water would be needed.

The engineers estimate that with such storage the last of the logs will have reached Grand falls before the first of July, and Fredericton before the first of August.

That the required amount of water may be stored is shown from the fact that, by the use of all the reservoirs which the engineers have found available, seventy-six thousand two hundred and fifty million cubic feet of water can be conserved above Grand falls, if the dams are constructed to the greatest practicable height; while, if

the dams are built to conserve the water merely to the ordinary high-water level of the several lakes, there will be available, without Chamberlain lake, and not including the Upper St. John, about twenty-six thousand million cubic feet, or, in other words, forty per cent of the storage available to high water mark on the second section of the river, together with the dams recommended on the Upper St. John, is sufficient to supply the necessary amount of water.

In the average of the years over which the gauge readings have extended the deficiency at Grand falls and Fort Kent has not amounted to more than five thousand million cubic feet, so that it will readily be seen that the ample margin has been provided for by taking the year of lowest water as a basis.

It then becomes a question to determine just where this forty per cent should be conserved. The commission has considered the necessity of providing this water where it may be used to facilitate the driving upon the several tributaries, as well as to maintain the required flow at Fort Kent and Grand falls; that is to say, it is thought desirable that the reservoirs should be distributed so far as possible to be of assistance to the driving on the several branches of the river.

In selecting the location of the dams recommended the commission has had regard to the relative expense involved.

The Allagash river, excluding Chamberlain lake, has a drainage area of twelve hundred and six square miles. A large amount of lumber is cut on the river, and the facilities for storing water are extensive. Some stored water is needed for the driving of the Allagash. A dam is now maintained at the foot of Long lake by the St. John Lumber Company.

The commission recommends that the following dams be constructed to ordinary high-water mark, to provide a storage: on the Allagash, at the foot of Churchill lake, of fourteen hundred million cubic feet; on the St. Francis, at the foot of Glazier lake, of two hundred and ninety million cubic feet; on Fish river, at Eagle lake, flowing Eagle, Square, Cross and Mud lakes, of six thousand six hundred and fifty-three million cubic feet; on Baker branch, at Jerry lake, of four hundred and ninety four million cubic feet, and at the foot of Temiscouata lake, of seven thousand seven hundred million cubic feet.

Third.—The conservation of the water mentioned above will provide for the driving of logs below Grand falls to the Fredericton booms. The commission has not thought it necessary to recommend the construction of any dams below Grand falls. Some channel improvements may be required.

The engineers have furnished specifications and details of the dams, to be built of concrete, and have given estimates of the cost, with the cost of hauling material and all expense included. The several dams recommended in this report should be constructed in such manner that, if it afterwards be found desirable to raise their height for power development or otherwise, additions could be made without changing the foundation or construction in other respects.

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Summary of the dams recommended and the cost of construction, as estimated by the engineers in their report, to which they advise the addition of twenty-five per cent:—

	Quantity in Million Cubic Feet.	Cost.
First Section—		\$ c.
St. John pond—Total storage.	644	20,666 00
Baker lake—Ordinary high water.	836	24,504 00
S.W. and S.E. branch—Reservoir.	1,000	No estimate.
Big Black river—Reservoir.	2,000	54,264 00
Second Section—		
Churchill lake—Ordinary high water.	1,400	14,754 00
Glacier lake " "	298	4,948 00
Eagle lake " "	6,633	9,799 00
Jerry lake " "	494	1,522 00
Temiscouata lake " "	7,700	51,582 00
Total.	21,025	\$182,039 00

It is also recommended, if it is found inexpedient to proceed with all the work at once, that the dams on the upper St. John be built first, as in that section more immediate necessity exists, and storage created there will naturally help the driving below.

CHANNEL IMPROVEMENTS.

The engineers have, at page 67 of their report, referred to the question of channel improvements, and at the end of the appendix thereto given a list of what may be necessary or advisable.

Your commission, while recognizing the necessity of these improvements, is of opinion that they must be taken up and dealt with as experience may dictate, and do not feel that recommendations can be definitely made in regard thereto until the effect of storage is determined.

Your commission is of opinion that if this system of storage is adopted it should be controlled by one central authority, so that the water could be released as required, having regard to the interests of all owners of logs, whether in the tributaries or in the main river, but so far as possible, to regulate the water to maintain the necessary supply at Fort Kent and Grand falls, respectively during the months of June and July, as above described.

MILL WASTE.

From the evidence and personal observation; the commission finds that a large portion of the sawdust, bark, and other waste material from the mills situated on the main river and its tributaries, is dumped into the river. This waste, in the aggregate, is an enormous mass, and, in the opinion of the commission, necessarily becomes, in course of years, injurious to navigation, by increasing the obstructions or the forming of shallows, and also has a serious effect upon the fishing industry carried on in the lower reaches of the river.

The commission therefore recommends that there be enacted and enforced in both countries the necessary and appropriate legislation to prohibit the continuance of this nuisance.

GENERAL RECOMMENDATIONS.

Your commission recommends:—

1. That the storage dams named on page ..of this report be built at the joint expense of the United States and Canada.

2. That by reciprocal legislation, or otherwise, there be established an International Board of Commissioners, consisting of three members; one to be appointed by the Government of the United States, one by the Government of Canada, and the chairman by the joint agreement of the two Governments for the purposes following:—

(a) To regulate the use of all waters stored by the dams above recommended wheresoever said waters are to be used, and to make rules in respect thereof.

(b) To supervise the making of any improvements in the channels of the river and its tributaries for which the two Governments may, from time to time, make provision.

(c) To regulate the sorting of intermingled logs on all parts of the river and its tributaries to which their jurisdiction in respect of such sorting shall be made to extend, and to make rules in respect thereof and to see that the same are obeyed.

The commissioners on behalf of the United States maintain that said jurisdiction over the sorting of logs should extend from the booms at or near Fredericton, including the same, to the headwaters of the river and its tributaries wherever sorting works now are or may be hereafter established, and whether the same be wholly in Maine or wholly in Canada.

The commissioners on behalf of Canada maintain that such jurisdiction should be limited wholly to those parts of the rivers which are boundary waters within the provisions of the Treaty of 1842.

3. That prize or no-mark logs should be sold each spring by public auction at such time and place as may be agreed upon by the owners of intermingled logs in the river, such prize or no-mark logs to be separated from other logs at such sorting works in the river as the purchaser may designate, and there to be scaled and delivered to the purchaser.

..

4. That the proceeds of sale of no-mark or prize logs, less the expense of driving, sorting, and scaling the same, be equitably distributed among the owners of marked logs entitled to share in such distribution.

5. That the provisions of the existing legislation in respect to the distribution of the proceeds of the sale of prize logs delivered to the purchaser at booms near Fredericton be amended to conform to the last two preceding recommendations.

Grand Falls: The commission has stated its general views in regard to the Grand falls on page—— of this report. The company controlling the shore rights was requested to submit its plan of proposed development for approval. No plan was submitted, and the commission is not able to make specific recommendations in respect thereto.

The Telos canal and Chamberlain dam: This matter has been considered on pageof this report.

Mr. Madigan, Commissioner on behalf of the United States, declines to make any recommendation in regard to Telos canal and Chamberlain dam for the following reasons:—

First: That it is not within the jurisdiction of this commission.

Second: That the right to divert the water of said lake as at present has become absolute as a matter of law.

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Third: That valuable vested interests on the Penobscot river have been acquired since this right so became absolute.

Fourth: That a conservation of Churchill lake and its tributaries will afford sufficient water for the Allagash river.

The Canadian Commissioners and Mr. Keegan, one of the Commissioners on behalf of the United States, recommend as follows:—

That is the storage dams for log driving purposes, recommended in this report, be built, it will not be necessary, to meet the requirements of log driving, to change the conditions now existing at Chamberlain and Telos lakes; but, if such dams are not constructed, that measures be taken to determine, by international agreement, or by obtaining the judgment of some competent tribunal, whether, by prescription or otherwise, the continued diversion of water by means of the Telos canal and dam and the Chamberlain dam is lawful; and, if found to be unlawful, that the said works be taken over by and at the expense of the state of Maine, and operated under the supervision of the said Board of Commissioners for the joint benefit of the St. John and Penobscot rivers, giving to each river, so far as may be possible, an equal share of the stored water, as the exigencies of log-driving conditions may require, and that the cost of maintenance and operations be borne by the owners of logs in both said rivers in proportion to their respective quantities of logs; or, failing such an arrangement, that the Chamberlain and Telos dams be taken down, the Telos canal closed up, and the waters of the Chamberlain system allowed to run in their natural channel down the Allagash river.

Dated at Fredericton, N.B., this seventeenth day of February, A.D., 1916.

MARINER G. F. TEED,

JOHN KEEFE,

Commissioners on behalf of Canada.

JOHN B. MADIGAN,

PETER CHARLES KEEGAN,

Commissioners of the United States.

NEW BRUNSWICK

—PLAN OF THE—
—RIVER ST JOHN—
—AT VAN BUREN—
SCALE 2000 FT = 1 IN

